



**Solution:** Ixxat Safe T100 I/O module with Anybus CompactCom module

**Sector:** Production automation, automotive industry

**Company:** Atlas Copco



## Production automation at Atlas Copco

### Safe and efficient: Flexible power screwdriver control in automotive production

In the automotive industry, precise and reliable screwdriving processes are essential, especially when assembling engines and bodies. Atlas Copco, a manufacturer of automated screwdriving solutions tasked with this was confronted with the challenge of designing semi-manual screwdriving processes to be more efficient and safer. In the process, several servomotor are used to operate a tool in order to tighten screws with a precisely defined torque in a specific order, for example for the final assembly of wheels. Since the tool is also guided manually, it must be possible at all times to safely shut down the torque locally. The screwdriving processes are controlled by a programmable logic controller (PLC) while the worker only guides the tool and starts the screwdriving process. Alternatively, the screwdriver can also be mounted on a robot arm for fully automated operation.

#### Too many cables, too heavy, too inflexible: The screwdriver control has potential to be optimized

The existing solution for worker guidance caused too high of a weight as well as restricted flexibility with the screwdriver control due to the existing cable routing. The controllers have to ultimately be flexibly expandable to be able to adapt to different numbers of screws. Another challenge was reliably

shutting down the screwdriver motors either individually or in combination, since the current daisy chain configuration in the emergency stop circuit only allowed for all devices to be shut down. This led to unnecessary production interruptions and potential safety risks.

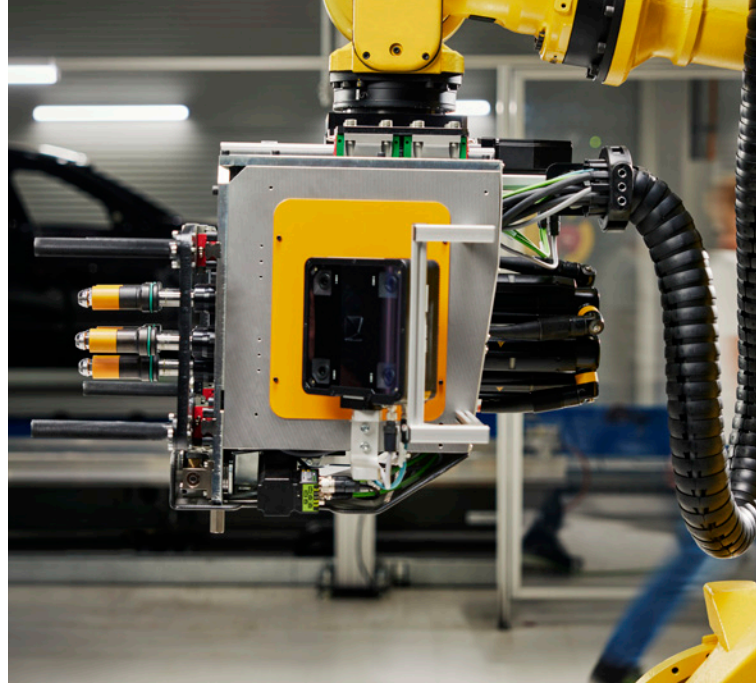
### CUSTOMER BENEFITS

- ✓ Reduced wiring effort: Safety via fieldbus minimizes the need for additional cables.
- ✓ Easy to expand: The modular approach allows for quick and easy adjustments to be made.
- ✓ Low investment: Use of pre-certified hardware components reduces costs.
- ✓ Short time to market: The pre-configured solution accelerates the implementation.
- ✓ Flexible options: Can be realized via permanently wired or communication-based modules, depending on the customer requirements.

## Functional safety: Flexible emergency stop control thanks to a safe I/O module

The solution to this challenge was implementing the Ixxat Safe T100 I/O modules from HMS Networks, which were used in combination with Anybus CompactCom modules. This solution made it possible to communicate via the fieldbus instead of fixed wiring. The local emergency stop could now be transmitted via the fieldbus to the respective servo controllers, which reduced the number of cables and the associated errors, and also improved the diagnostic possibilities.

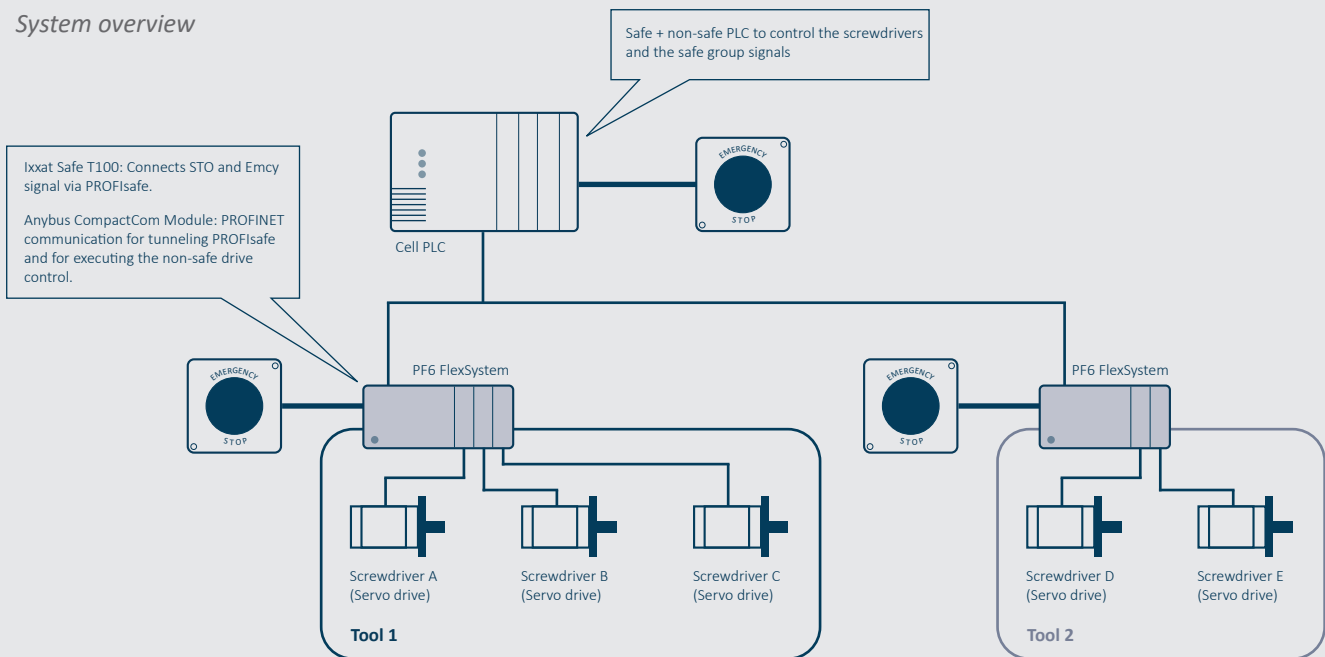
Thanks to the modular approach with the T100 module and the CompactCom module, the safety via fieldbus remained an optional customer solution. The expandability was simplified, since no additional safety cables had to be laid. A defined shutdown of connected motor controllers was realized via the safety PLC, without requiring physical rewiring. Emergency stop groups could be configured in the safe application. Using the Anybus CompactCom and the Ixxat Safe T100 module made it possible to connect the screwdriver servos to the controllers of different manufacturers (Siemens, Rockwell, Beckhoff), whereby the safe/non-safe protocols could be easily interchanged.



## A strong combination: Ixxat Safe T100 and Anybus CompactCom

The Ixxat Safe T100 module is a pre-configured safety module that allows for seamless integration into industrial applications. It offers a flexible safety solution, which can be used both in individual applications, as well as in complex production environments. The combination with Anybus CompactCom modules allows for safe and efficient fieldbus communication.

### System overview



More information can be found at <https://www.hms-networks.com/de/functional-safety-solutions>